

Figure 1

20091101 51916001

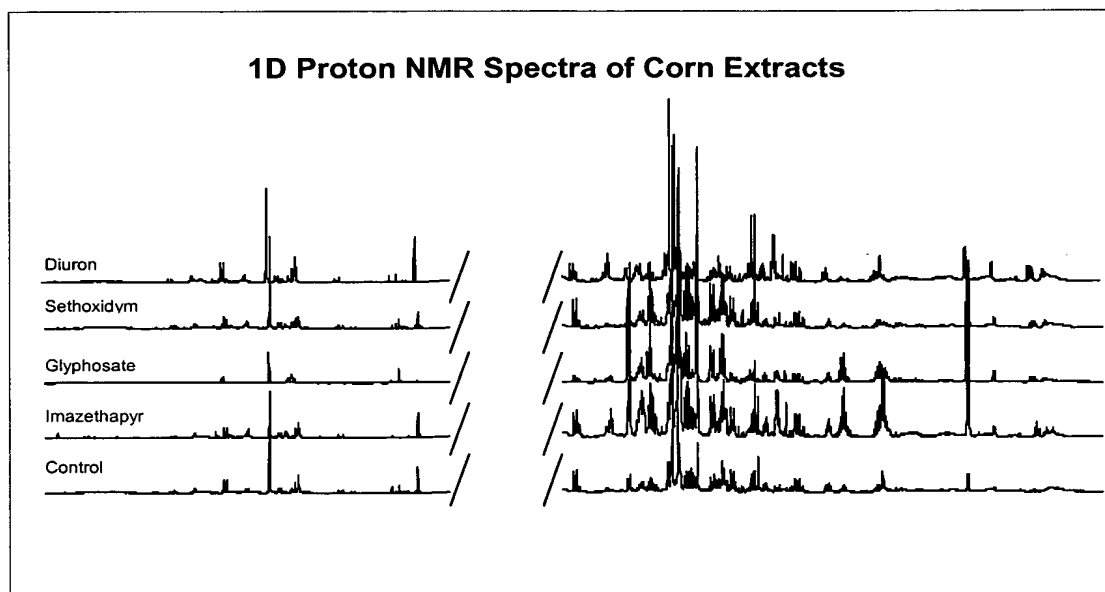


Figure 2

10051615, 011802

Batch_Spectrum	Seq. No.	Treatment	NetworkOutput: Node/Node Value						Network Output		
Training Set											
na022400_02	2	Control	Control	0.99996	0	0.00001	0.00003	0.00002	Foul	0.00001	Control
na022400_05	5	Control	Control	0.99998	0	0	0.00002	0.00003	0.00001	0.00001	Control
na030100_06	29	Control	Control	0.99998	0	0	0.00002	0.00003	0.00001	0.00001	Control
na030100_09	32	Control	Control	0.99998	0	0	0.00001	0.00004	0.00001	0.00001	Control
na030100_11	34	PURSUIT	PURSUIT	0	0.99996	0.00001	0.00003	0.00004	0.00002	0.00002	PURSUIT
na030100_14	37	PURSUIT	PURSUIT	0	0.99996	0.00001	0.00004	0.00004	0.00002	0.00002	PURSUIT
na030100_17	40	PURSUIT	PURSUIT	0	0.99995	0.00002	0.00003	0.00004	0.00002	0.00002	PURSUIT
na030100_19	42	PURSUIT	PURSUIT	0	0.99995	0.00001	0.00004	0.00004	0.00002	0.00002	PURSUIT
na030600_04	51	Control	Control	0.99993	0	0.00002	0.00002	0.00001	0.00001	0.00001	Control
na030600_08	55	Sethoxydim	Sethoxydim	0.00002	0.00001	0.99996	0.00005	0.00001	0.00004	0.00004	Sethoxydim
na030600_10	57	Sethoxydim	Sethoxydim	0.00002	0.00002	0.99993	0.00002	0.00001	0.00004	0.00004	Sethoxydim
na030600_13	60	Foul	Foul	0	0.00004	0.00002	0	0	0.99991	0.99991	Foul
na030600_15	62	Glyphosate	Glyphosate	0.00007	0.00004	0.00001	0.99992	0	0.00003	0.00003	Glyphosate
na030600_16	63	Glyphosate	Glyphosate	0.00006	0.00004	0.00003	0.99994	0	0.00003	0.00003	Glyphosate
na030600_20	67	Diuron	Diuron	0.00004	0.00004	0.00002	0	0.99993	0.00003	0.00003	Diuron
na030600_21	68	Diuron	Diuron	0.00007	0.00004	0.00002	0	0.99994	0.00003	0.00003	Diuron
Test Set											
na022400_01	1	Control	Control	0.99998	0	0	0.00002	0.00003	0.00001	0.00001	Control
na022400_03	3	Control	Control	0.99996	0	0.00001	0.0001	0.00002	0.00001	0.00001	Control
na022400_04	4	Control	Control	0.99998	0	0	0.00002	0.00003	0.00001	0.00001	Control
na022400_06	6	Control	Control	0.99997	0	0.00002	0	0	0	0	Control
na022400_07	7	Control	Control	0.99998	0	0	0.00002	0.00003	0.00001	0.00001	Control
na022400_08	8	Control	Control	0.99997	0	0.00001	0.00001	0.00001	0.00001	0.00001	Control
na022400_09	9	PURSUIT	PURSUIT	0	0.02733	0	0.01224	0	0.00006	0.00006	Unknown
na022400_10	10	PURSUIT	PURSUIT	0.00086	0.00118	0	0.34361	0	0.00002	0.00002	Unknown
na022400_11	11	PURSUIT	PURSUIT	0.00085	0.00141	0	0.27197	0	0.00002	0.00002	Unknown
na022400_12	12	PURSUIT	PURSUIT	0.00016	0.0025	0	0.12513	0	0.00003	0.00003	Unknown
na022400_13	13	PURSUIT	PURSUIT	0.00013	0.00259	0	0.12979	0	0.00003	0.00003	Unknown
na022400_14	14	PURSUIT	PURSUIT	0.00013	0.00238	0	0.13242	0	0.00003	0.00003	Unknown
na022400_15	15	PURSUIT	PURSUIT	0	0.10029	0	0.00586	0.00001	0.00001	0.00001	Unknown
na022400_16	16	PURSUIT	PURSUIT	0.00005	0.00469	0	0.06222	0	0.00004	0.00004	Unknown
na022400_17	17	PURSUIT	PURSUIT	0.00114	0.00127	0	0.29608	0	0.00002	0.00002	Unknown
na022400_18	18	PURSUIT	PURSUIT	0.00091	0.00139	0	0.27092	0	0.00002	0.00002	Unknown
na022400_19	19	PURSUIT	PURSUIT	0.00048	0.00185	0	0.18992	0	0.00002	0.00002	Unknown
na022400_20	20	PURSUIT	PURSUIT	0.00214	0.00104	0	0.35051	0	0.00002	0.00002	Unknown
na022400_21	21	PURSUIT	PURSUIT	0.00073	0.00088	0	0.34762	0	0.00002	0.00002	Unknown
na022400_22	22	PURSUIT	PURSUIT	0.00046	0.00146	0	0.25479	0	0.00002	0.00002	Unknown
na022400_23	23	PURSUIT	PURSUIT	0.00086	0.00123	0	0.3072	0	0.00002	0.00002	Unknown
na030100_01	24	Control	Control	0.99996	0	0	0.00002	0.00005	0.00001	0.00001	Control
na030100_02	25	Control	Control	0.99997	0	0	0.00001	0.00238	0.00001	0.00001	Control
na030100_03	26	Control	Control	0.99997	0	0	0.00001	0.00006	0.00001	0.00001	Control
na030100_04	27	Control	Control	0.99996	0	0.00002	0	0.00001	0	0	Control
na030100_05	28	Control	Control	0.99993	0	0.00001	0	0.00002	0.00001	0.00001	Control

Figure 3a

Training Set	Control	PURSUIT	Sethoxim	Glyphosate	Diuron	Foul	Assignment
na030100_07	Control	0	0	0.00002	0.00002	0.00001	Control
na030100_08	Control	0.99996	0	0	0.00001	0.00001	Control
na030100_10	PURSUIT	0	0.99996	0.00003	0.00005	0.00002	PURSUIT
na030100_12	PURSUIT	0	0.99996	0.00003	0.00004	0.00002	PURSUIT
na030100_13	PURSUIT	0	0.99996	0.00004	0.00004	0.00002	PURSUIT
na030100_15	PURSUIT	0	0.99994	0.00003	0.00005	0.00002	PURSUIT
na030100_16	PURSUIT	0	0.99995	0.00003	0.00004	0.00002	PURSUIT
na030100_18	PURSUIT	0	0.99995	0.00004	0.00004	0.00002	PURSUIT
na030100_20	PURSUIT	0	0.99995	0.00003	0.00008	0.00002	PURSUIT
na030100_21	PURSUIT	0	0.99995	0.00004	0.00003	0.00002	PURSUIT
na030100_22	PURSUIT	0	0.99995	0.00003	0.00004	0.00002	PURSUIT
na030600_12	Sethoxydim	0.00005	0.00003	0	0.00003	0.00003	Sethoxydim
na030600_14	Glyphosate	0.00006	0.00004	0.99994	0	0.00003	Glyphosate
na030600_17	Glyphosate	0.00005	0.00003	0.99993	0	0.00003	Glyphosate
na030600_18	Foul	0	0.00007	0	0.00001	0.99993	Foul
na030600_19	Diuron	0.00034	0.00003	0	0.99992	0.00003	Diuron
na030600_22	Diuron	0	0.00005	0	0.99989	0.00004	Diuron
na030600_23	Diuron	0.00065	0.00014	0	0.92715	0.00011	Diuron
na030600_24	Diuron	0.00002	0.00005	0	0.99993	0.00003	Diuron
na022400_02	Control	0	0.00001	0.00003	0.00002	0.00001	Control
na022400_05	Control	0.99998	0	0.00002	0.00003	0.00001	Control
na030100_06	Control	0.99998	0	0.00002	0.00003	0.00001	Control
na030100_09	Control	0.99998	0	0.00001	0.00004	0.00001	Control
na030100_11	PURSUIT	0	0.99996	0.00003	0.00004	0.00002	PURSUIT
na030100_14	PURSUIT	0	0.99996	0.00001	0.00004	0.00002	PURSUIT
na030100_17	PURSUIT	0	0.99995	0.00002	0.00004	0.00002	PURSUIT
na030100_19	PURSUIT	0	0.99995	0.00001	0.00004	0.00002	PURSUIT
na030600_04	Control	0.99993	0	0.00002	0.00001	0.00001	Control
na030600_08	Sethoxydim	0.00002	0.00001	0.00005	0.00001	0.00004	Sethoxydim
na030600_10	Sethoxydim	0.00002	0.00002	0.00002	0.00001	0.00004	Sethoxydim
na030600_13	Foul	0	0.00004	0	0	0.99991	Foul
na030600_15	Glyphosate	0.00007	0.00004	0.99992	0	0.00003	Glyphosate
na030600_16	Glyphosate	0.00006	0.00004	0.99994	0	0.00003	Glyphosate
na030600_20	Diuron	0.00004	0.00004	0	0.99993	0.00003	Diuron
na030600_21	Diuron	0.00007	0.00004	0	0.99994	0.00003	Diuron

Figure 3b

SNNS result file		V1.4-3D				
Training file		na022400				
Test file na040400						
No. of patterns:		24				
No. of input units:		1080				
No. of output units:		6				
Startpattern:		1				
Endpattern:		24				
Teaching output included						
Treatment:	1.1 Control					
Target:	1	0	0	0	0	0
Output:	0.99954	0.00045	0.00001	0.00001	0.00001	0.00001
Treatment:	2.1 Control					
Target:	1	0	0	0	0	0
Output:	0.99936	0.00065	0.00001	0.00001	0.00001	0.00001
Treatment:	3.1 Control					
Target:	1	0	0	0	0	0
Output:	0.99951	0.00047	0.00001	0.00001	0.00001	0.00001
Treatment:	4.1 Control					
Target:	1	0	0	0	0	0
Output:	0.99963	0.00037	0.00001	0.00001	0.00001	0.00001
Treatment:	5.1 Chlorsulfuron					
Target:	0	0	0	0	0	0
Output:	0.00159	0.99843	0	0.00001	0	0
Treatment:	6.1 Chlorsulfuron					
Target:	0	0	0	0	0	0
Output:	0.00806	0.99165	0	0	0	0
Treatment:	7.1 Chlorsulfuron					
Target:	0	0	0	0	0	0
Output:	0.00334	0.99669	0	0	0	0
Treatment:	8.1 Chlorsulfuron					
Target:	0	0	0	0	0	0
Output:	0.00014	0.99985	0	0.00001	0	0
Treatment:	9.1 Chlorsulfuron					
Target:	0	0	0	0	0	0
Output:	0.00667	0.99376	0	0	0	0
Treatment:	10.1 Imazamethabenz					
Target:	0	0	0	0	0	0
Output:	0.00044	0.99955	0	0	0	0
Treatment:	11.1 Imazamethabenz					
Target:	0	0	0	0	0	0
Output:	0.00013	0.99987	0	0	0	0
Treatment:	12.1 Imazamethabenz					
Target:	0	0	0	0	0	0
Output:	0.00208	0.99798	0	0.00001	0.00001	0

Figure 4a

10051615 011600

SNNS result file		V1.4-3D				
Training file		na022400				
Test file na040400						
No. of patterns:		24				
No. of input units:		1080				
No. of output units:		6				
Startpattern:		1				
Endpattern:		24				
Teaching output included						
Treatment:	13.1 Imazamethabenz					
Target:	0	0	0	0	0	0
Output:	0.00223	0.99755	0	0	0	0
Treatment:	14.1 Imazamethabenz					
Target:	0	0	0	0	0	0
Output:	0.06789	0.93484	0	0	0	0
Treatment:	15.1 Sulfumeturon					
Target:	0	0	0	0	0	0
Output:	0.00046	0.99955	0	0	0	0
Treatment:	16.1 Sulfumeturon					
Target:	0	0	0	0	0	0
Output:	0.00102	0.999	0	0.00001	0	0
Treatment:	17.1 Sulfumeturon					
Target:	0	0	0	0	0	0
Output:	0.00194	0.99813	0	0.00001	0	0
Treatment:	18.1 Sulfumeturon					
Target:	0	0	0	0	0	0
Output:	0.00013	0.99987	0	0	0	0
Treatment:	19.1 Sulfumeturon					
Target:	0	0	0	0	0	0
Output:	0.00014	0.99985	0	0	0	0
Treatment:	20.1 Imazapyr					
Target:	0	0	0	0	0	0
Output:	0.0018	0.998	0	0	0	0
Treatment:	21.1 Imazapyr					
Target:	0	0	0	0	0	0
Output:	0.00031	0.99968	0	0.00001	0	0
Treatment:	22.1 Imazapyr					
Target:	0	0	0	0	0	0
Output:	0.00175	0.99791	0	0	0	0
Treatment:	23.1 Imazapyr					
Target:	0	0	0	0	0	0
Output:	0.00018	0.9998	0	0	0	0
Treatment:	24.1 Imazapyr					
Target:	0	0	0	0	0	0
Output:	0.06579	0.93074	0	0	0	0

Figure 4b

100345015000

Class	Control	AHAS	ACCase	EPSPS	PS II	Necrotic*	HPPD	PROTOX	Carotenoid	PSI	Microtubule	PDS	Uncoupler	Auxin-like	Auxin Transp	DHP	Acetamide	PSII_c1	PSII_c2	PSII_c3	Glutamine	Mitosis	Unknown	No Class
Control	54																							3
AHAS		30																						
ACCase			6																					
EPSPS				4																				
PS II					6																			
Necrotic*						2																		
HPPD							10																	
PROTOX								12																
Carotenoid									12															
PSI										9														
Microtubule											7													
PDS												5												
Uncoupler													9											
Auxin-like														11										
Auxin Transp															8	1								
DHP																8	6							
Acetamide																								
PSII_c1																		9						
PSII_c2																			1	10				
PSII_c3																					12			
Glutamine																					22			
Mitosis																						8		
Unknown																								
NoClass																								

Rows: Teaching Input; Columns: Classification for Nineteen MOAs
 (23 Classes, Including "Control" = Untreated Plants, 1 "Spare" Class, and "Unknown" Added by SNNs)

Figure 5

CLASS	Control	AHAS	ACCase	EPSPS	Not Used	Necrotic*	HPPD	PROTOX	Carotenoid	PSI	Microtubule	PDS	Uncoupler	Auxin-like	Auxin Transp	DHP	Acetamide	PSII_c1	PSII_c2	PSII_c3	Glutamine	Mitosis	Spare	Unknown	# Plants
Control	27	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	31
AHAS	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
ACCase	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
EPSPS	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Not Used	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Necrotic*	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
HPPD	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
PROTOX	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Carotenoid	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
PSI	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Microtubule	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	6
PDS	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	6
Uncoupler	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	1	0	0	0	0	0	0	0	0	3
Auxin-like	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	6
Auxin Transp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	6
DHP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	6
Acetamide	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	5
PSII_c1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3
PSII_c2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	6
PSII_c3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	0	0	0	0	0	10
Glutamine	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	6
Mitosis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	12
Spare	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	6
NoClass	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Rows: Teaching Input; Columns: Classifications for Nineteen MOAs
 (23 Classes, Including "Control" = Untreated Plants, 1 "Spare" Class, and "Unknown" Added by SNNS)

Figure 6

*Necrotic = dead or decaying plant

Rows: Teaching Input, Columns: Classification as Percentage of Total Plants Tested for Nineteen MOAs

Figure 7

CLASS	Class	Control	AHAS	ACCase	EPSPS	Not Used	Necrotic*	HPPD	PROTOX	Carotenoid	PSI	Microtubule	PDS	Uncoupler	Auxin-like	Auxin Transp	DHP	Acetamide	PSII_c1	PSII_c2	PSII_c3	Glutamine	Mitosis	Spare	Unknown
Control	0	87						3					3												6
AHAS	1		100																						
ACCcase	2			100																					
EPSPS	3				100																				
Not Used	4																								
Necrotic*	5						100																		
HPPD	6							50																	50
PROTOX	7								100																
Carotenoid	8									100															
PSI	9										67														33
Microtubule	10											33													67
PDS	11												33												67
Uncoupler	12													67			17								17
Auxin-like	13														67										33
Auxin Transp	14															50	17								33
DHP	15																17								83
Acetamide	16																	67							33
PSII_c1	17																		50	17					33
PSII_c2	18																		10	8					10
PSII_c3	19																				100				
Glutamine	20																					92			
Mitosis	21																								50

Rows: Teaching Input, Columns: Classification as Percentage of Total Plants Tested for Nineteen MOAs
 (23 Classes, Including "Control" = Untreated Plants, 1 "Spare" Class, and "Unknown" Added by SNNs)

Figure 8